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Executive Research Project
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**The Education Industry
An Economic Baseline
(Post Secondary Education and
Vocational-Technical Training)**

**Commander
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U. S. Navy**

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REPORT DOCUMENTATION PAGE

| | | | | |
|---|--|---|---|--------------------------------|
| 1a. REPORT SECURITY CLASSIFICATION Unclassified | | | 1b. RESTRICTIVE MARKINGS | |
| 2a. SECURITY CLASSIFICATION AUTHORITY N/A | | | 3. DISTRIBUTION / AVAILABILITY OF REPORT Distribution Statement A: Approved for public release; distribution is unlimited. | |
| 2b. DECLASSIFICATION / DOWNGRADING SCHEDULE N/A | | | 5. MONITORING ORGANIZATION REPORT NUMBER(S) Same | |
| 4. PERFORMING ORGANIZATION REPORT NUMBER(S) NDU-ICAF-92- <i>DIS 146</i> | | | 7a. NAME OF MONITORING ORGANIZATION National Defense University | |
| 5a. NAME OF PERFORMING ORGANIZATION Industrial College of the Armed Forces | 6b. OFFICE SYMBOL (if applicable) ICAF-FAP | 7b. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000 | | |
| 5c. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000 | | 7b. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000 | | |
| 8a. NAME OF FUNDING / SPONSORING ORGANIZATION | 8b. OFFICE SYMBOL (if applicable) | 9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER | | |
| 8c. ADDRESS (City, State, and ZIP Code) | | 10. SOURCE OF FUNDING NUMBERS | | |
| | | PROGRAM ELEMENT NO. | PROJECT NO. | TASK NO. |
| | | WORK UNIT ACCESSION NO. | | |
| 11. TITLE (Include Security Classification) <i>The Education Industry -- An Economic Baseline (Post Secondary Education and Vocational - Technical Training)</i> | | | | |
| 12. PERSONAL AUTHOR(S) <i>Donald Tisen</i> | | | | |
| 13a. TYPE OF REPORT Research | 13b. TIME COVERED FROM <i>Aug 91</i> TO <i>Apr 92</i> | 14. DATE OF REPORT (Year, Month, Day) April 92 | 15. PAGE COUNT <i>29</i> | |
| 16. SUPPLEMENTARY NOTATION | | | | |
| 17. COSATI CODES | | | 18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) | |
| FIELD | GROUP | SUB-GROUP | | |
| | | | | |
| | | | | |
| 19. ABSTRACT (Continue on reverse if necessary and identify by block number) | | | | |
| SEE ATTACHED | | | | |
| 20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS | | | 21. ABSTRACT SECURITY CLASSIFICATION Unclassified | |
| 22a. NAME OF RESPONSIBLE INDIVIDUAL Judy Clark | | | 22b. TELEPHONE (Include Area Code) (202) 475-1889 | 22c. OFFICE SYMBOL ICAF-FAP |

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DIS 14B-

ECONOMIC BASELINE: POST-SECONDARY & VOCATIONAL/TECHNICAL EDUCATION

This paper provides an industry analysis of the upper two tiers of the Education Industry. It examines the structure, conduct and performance of the college and university sectors and the training segment. This baseline serves as a companion to an Elementary and Secondary Education Industry baseline provided by Col Hal Meyer.

As an overview, the post-secondary education system is world renown while the training segment has received less than favorable criticism. This baseline is the first for the new Education Defense Industry Study and as such is fairly broad. Follow-on baselines will likely be more specific.

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| NTIS | CRA&I | <input checked="" type="checkbox"/> |
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| Unannounced | | <input type="checkbox"/> |
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| Availability Codes | | |
| Dist | Avail and/or Special | |
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INTRODUCTION

To consider education as an "industry" may seem to be somewhat of a contradiction in terms. To many traditionalists, education is outside the boundaries of industry, existing only as a basic service or foundation upon which "true" industries are developed. Additionally, the political and social effects of education often diminish the economic and industrial facets of this "business".

And yet, education is an industry. Monopolized as a public good by many countries, education takes its factors of production (teachers and facilities) from the marketplace to produce an output (value-added-to students)...in short, the human capital theory. It is a broad field, beginning in pre-school and continuing through adult education and training. In the United States, one of every three people is either a student or trainee; formal learning involves 77 million people annually. Over \$500 billion per year is spent in the U.S. education industry, making it considerably larger than the entire U.S. defense industry. Besides its size, its influence is crucial to all industry. As Michael Porter points out in The Competitive Advantage of Nations: "Education and training constitute perhaps the single greatest long term leverage point available to all levels of government in upgrading industry. Improving the general education system is an essential priority of government, and a matter of economic and not just social policy."

This statement underlies the controversy of the education industry. The key issue: Is American education/training helping or hindering our competitiveness in an increasingly international marketplace? From the initial alarms of the 1983 "A Nation at Risk" report by the National Commission on Excellence in Education to the recent 1991 "National Education Goals Report", the prevailing attitude is that the U.S. is not meeting international academic standards... whatever these "standards" may be. As South Carolina Governor Carroll A. Campbell, Jr. (R), Chairman of the National Education Goals Panel, puts it, "Our students are not world class and we recognize it."³

This research paper provides an economic baseline for the upper two segments of the education industry: post-secondary (higher) education and vocational-technical (voc-tech) training.⁴ Post-Secondary and Voc-Tech Training are analyzed per the standard organizational studies model developed by Edward S. Mason⁵: structure (the players), conduct (their behavior), and performance (how well they do). Each segment is addressed in turn, beginning with higher education.⁶

HIGHER EDUCATION

STRUCTURE: U.S. Higher Education, in its extremely diverse and decentralized form, offers post-secondary education to a broad segment of our society. This section discusses the sellers (institutions) and buyers (students) of Higher Education and links

the two through the governance or administration system. International comparisons are made where appropriate.

INSTITUTIONS: In terms of the *sellers*, there were over 3,500 two- and four-year institutions in 1990 categorized as follows:

4 YEAR INSTITUTIONS:

| | | |
|---------------------------|--------------|-------|
| PUBLIC UNIVERSITIES | 93 | |
| PUBLIC 4 YR INSTITUTIONS | 595 | |
| PRIVATE UNIVERSITIES | 62 | |
| PRIVATE 4 YR INSTITUTIONS | <u>1,532</u> | 2,282 |

2 YEAR INSTITUTIONS:

| | | |
|---------|------------|--------------|
| PUBLIC | 968 | |
| PRIVATE | <u>440</u> | <u>1,408</u> |
| TOTAL | | 3,690 |

Universities are distinguished from other four-year institutions in that they have one or more graduate professional schools. The distinction between four-year and two-year rests with the degree conferred--bachelors and associates, respectively. Over the last thirty years, the total number of institutions has risen by 150 percent with two- year public institutions increasing the most--290 percent.¹ Over the same period, 275 institutions ceased operations; 242 of these were private schools with financial constraints being the major cause. California has the most schools with 310; Alaska and Nevada have the fewest with 8 each.²

Despite the large number of schools, higher education is a fairly concentrated segment of the education industry. Ten percent of the institutions control 50 percent of the enrollment. If you expand this to 25 percent, 75 percent of those enrolled are in these

institutions.¹¹ At the lower end of the distribution, 39 percent of colleges and universities control only 4 percent of the enrollment. Though far from a true oligopoly, larger schools have a significant influence over this segment through prestige, course offerings and cost. Additionally, the quality aspects of the "elite" schools add another level of concentration to this segment.

Governance or administration is a bridge between institutions and students and merges slightly into the conduct of the industry. The structure of higher education typically reflects the country's general education governance. Internationally, most countries control their public higher educational systems at the national level, unlike the U.S. system where control rests with the state or board of visitors. This contrast is most apparent at the two year post-secondary institutions (community colleges or vocational schools) where the foreign national education ministries control the curricula. In the U.S., the community colleges are often governed by the same school board as primary and secondary education.¹²

The influence of educational governance gets more distorted within the university for several reasons. Historically, many universities were founded before nationalized education was established. As such, self-governance is prevalent particularly in many European institutions. However, the dependence on national funding limits total autonomy. Secondly, private higher education

is much more common internationally than at the lower educational levels. Although not typically approaching the 22 percent student level of U.S. higher education, international private education does enjoy greater flexibility than public institutions. Once again, however, financial effects of a free or highly subsidized public university education versus an expensive private one, lessen this flexibility. Finally, colonial impacts often carry over to younger nations' higher educational systems. Many former colonies' higher education systems reflect those of their former masters.

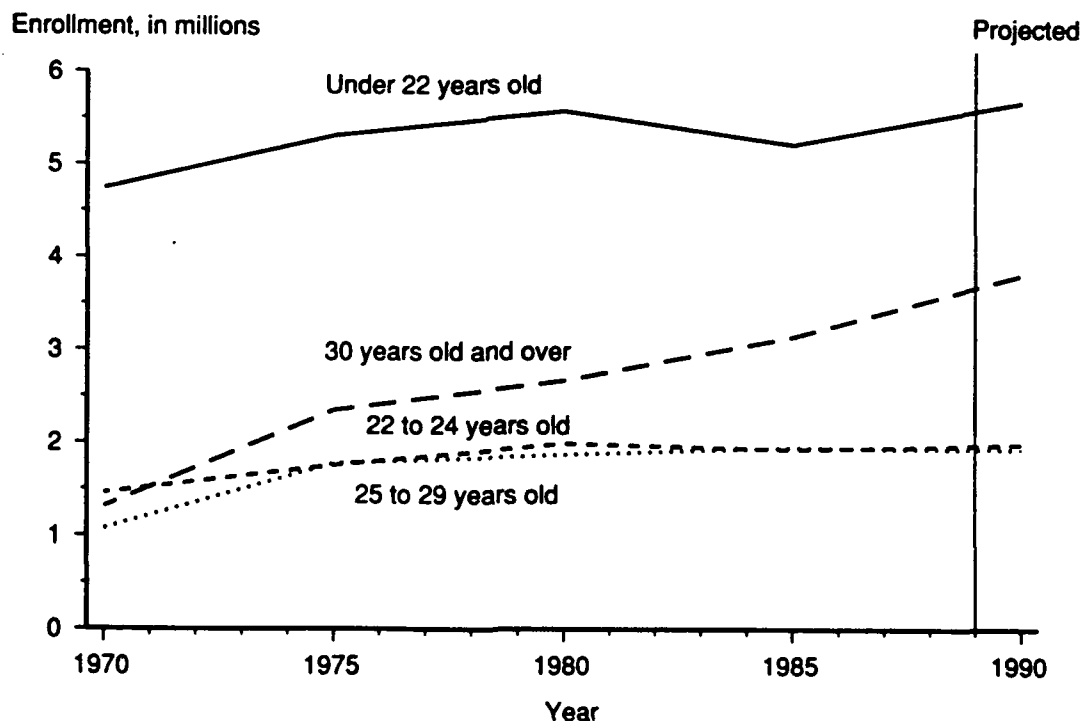
STUDENTS: The *buyers* enjoy an unusually broad access to U.S. Higher Education--58 percent of all high school graduates go to college versus 29 percent in Japan.¹² Far more students (10.1 million) attend public than private institutions (2.9 million) due to the larger size and lower costs of public schools. Further, private college enrollment has remained relatively flat from the 1970s. Almost two-thirds (63 percent) of students in 1988 were enrolled in four-year institutions and about one-third in two-year colleges.¹³ In terms of graduate and undergrad programs, 1.74 million are involved in post-bachelor work while 11.3 million students are at the undergrad level. Business degrees are the most prevalent at the bachelor's level, while education is the largest field at the masters' and doctoral level.

Between 1970 and 1980, college enrollment increased more than 40 percent.¹⁴ During the 1980s, enrollment continued to increase but

at a slower pace due to the trail-off of the "baby boomers". In 1988, a record 13 million students were enrolled in American higher education, a 7.8 percent increase from 1980.¹⁵ More women (7 million) than men (6 million) were enrolled in 1988 with women students increasing in enrollment during the 1980s by over 13 percent versus 2 percent for men. Three other student structural trends deserve mention:

a. Part-time students are growing in number--up 16.5 percent in the last ten years, reflecting increasing availability and flexibility of college education.

b. Older students' enrollment has increased more rapidly than the number of younger students. From 1970 to 1989, enrollment of persons 25 years or older rose by 141 percent versus 24 percent for those under 25.¹⁶ The rise of older and part-time student enrollment has diminished a fear of severe retrenchment in higher education over the drop of the 18 year old age group...a 25 percent decline from 1979 to 1992 for this key input cohort.¹⁷ Figure 1 displays the changes in enrollment by age over the last two decades.



c. Overall, the number of Associate, Bachelor and Doctoral degrees awarded increased from 1978 to 1988, by 6 percent, 8 percent and 8 percent respectively.¹⁶ Masters degrees decreased by 4 percent over the same period, perhaps reflecting a lessening in importance.

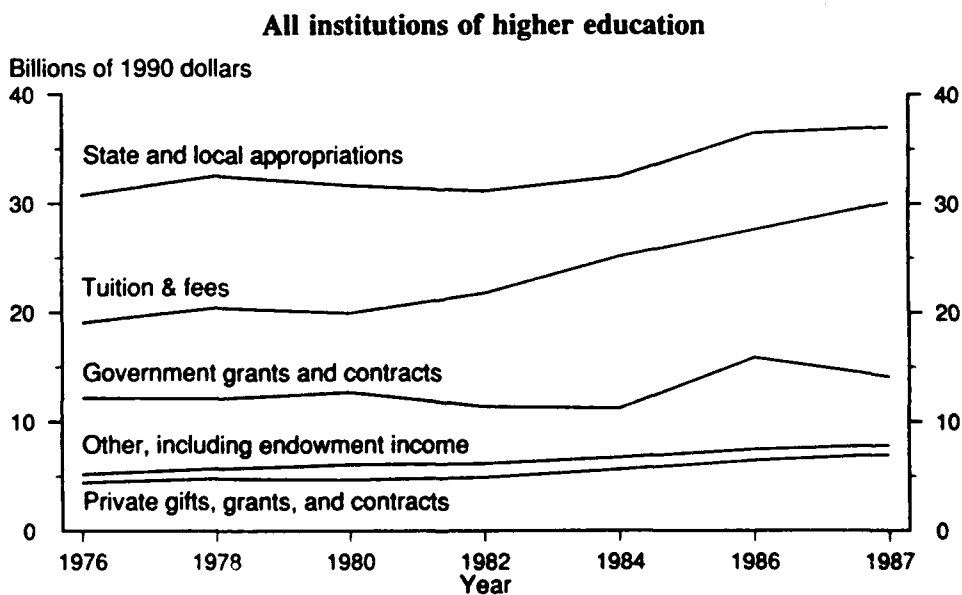
Student aid serves as a bridge to the financial aspects of the conduct of the Higher Education industry segment. Sixty percent undergrad and 74 percent graduate students receive some form of financial aid.¹⁷ Federal aid is the most common for undergrads while institutional aid is the more prevalent for grad students. In a 1986 report of the Joint Economic Committee of Congress, average graduates from a private 4 year college are likely to leave school with an \$8,950 debt and those from a public school with a \$6,490 debt.¹⁸

CONDUCT: The skewed concentration where 10 percent of the institutions control 50 percent of the enrollment, the varied governance systems, and the importance of student aid introduce the conduct issues of the higher education sector of the Education industry. This section will explore higher education's cost structure (revenue/expenditures), employment factors (concentrating on the faculty) and selected other conduct issues.

REVENUE: With revenues of \$109 billion, higher education is indeed big business. There is a clear distinction between funding sources

for public and private institutions. Public institutions get 57 percent of their funds from state and local appropriations and just 19 percent from tuition. Conversely, private institutions depend on tuition for 57 percent of their funds and state and local money for just over 1 percent.²¹ Obviously, recent cutbacks in state and local budgets have impacted public institutions: 28 states reduced their funding for higher education in 1991.²²

For both public and private schools, tuition is up more than 50 percent (in constant dollars) from 1976 to 1987.²³ During the 1980s, undergrad charges rose 109 percent at public institutions and over 145 percent at private schools, reflecting the latter's dependence on the tuition funding source. Both of these tuition increases exceeded the consumer price index increase of 64 percent over this same 10 year period.²⁴ Figure 2 shows the growth of various revenue sources for the last twenty years and, as discussed, tuition is the leading growth element.



The federal role is less significant financially, contributing 17 percent of private revenues and 10 percent of public school funds.¹⁵ Aside from the military academies, federal support stops short of general purpose subsidies. However, federal involvement serves to equalize the disparity between public and private state/local funding as both these types of post-secondary schools have fairly equal funding access. Besides the pure financial aspect, the federal government pecuniary involvement is five-fold:¹⁶

a. Direct Institutional Payments: Centered predominantly on research and development grants, the top 100 universities absorb 85 percent of this R&D funding. Campus based student aid programs account for the remainder of this area.

b. Payments to Students: Pell grants, guaranteed student loans and GI Bill/VEAP dominate this source--\$10 billion in 1991.¹⁷

c. Payments to States: Facilities construction funds are administered on a state-by-state formula. With the reduction of general revenue sharing, this area is decreasing in importance.

d. Tax Incentives: Individual and corporate contributions to scholarships and other programs are not taxed.

e. Regulatory Activities: From civil rights to employee pensions, there is wide federal regulatory involvement.

EXPENDITURES: Like revenues, higher education expenditures have grown. However, public and private distinctions aren't as important as with revenue sources. Expenditures per student have increased in constant terms by 26 percent from 1977 to 1987. Private funding increased more than public funding. Administrative expenditures (institutional and academic support) rose the most during the 1980s.¹⁸

Public: Up 17% v. 6% for instruction per student.
Private: Up 24% v. 14% for instruction per student.

Still, the leading expenditure for both public and private institutions is instruction costs; in 1987, for example, the cost was 34.5 percent for public and 27 percent for private.

When instruction costs are combined with other labor sources, personnel are the leading costs for the post-secondary system. A key trend--reflected by expenditure growth--is the change in student-to-staff ratio, decreasing from 5.41 to 4.8/1 from 1976 to 1987. Non-teaching professionals showed the greatest increase from 15 to 21 percent over this period.²⁹ This major cost area is discussed further in the next section.

Employment: In the fall of 1987, there were 2.338 million employees in higher education--more than in all U.S. Armed Services. The breakdown by position area:

| | | | |
|-----------------------------|--------|-------|--|
| PROFESSIONAL STAFF: | 1,438K | | |
| FACULTY | 793K | 33.9% | |
| NON-FACULTY PROFESSIONALS | 350K | 15.0% | |
| INSTRUCTOR/RESEARCH ASS'TS | 161K | 6.9% | |
| EXEC/ADMIN/MGMT | 138K | 5.7% | |
| NON-PROFESSIONAL STAFF: | 900K | | |
| CLERICAL/SECRETARIAL | 435K | 18.6% | |
| SERVICE & MAINTENANCE | 236K | 10.1% | |
| TECHNICAL/PARA-PROFESSIONAL | 167K | 7.2% | |
| SKILLED CRAFTS | 61K | 2.6% | |

Without minimizing any of these groups, faculty is the most crucial labor factor in Higher Education due to its direct impact on

student education and research in some cases. Sixty-six percent of the faculty is employed full time with the remainder (34 percent) part time. Forty-three percent (all full time) of the faculty is tenured.³¹ This figure has remained relatively stable--slightly higher at public schools--and is a significant fixed cost factor for post-secondary education.

There is a broad range in salaries. The range is defined by both the field and the status of the faculty. In 1988, a full professor at a private university received an average salary of \$58,332--up 66 percent since 1980. On the low end, an instructor at a private two year institution was paid \$18,500--52 percent higher than in 1980.³² Of importance is that over three-quarters of the full time faculty earn income outside their basic salary with research, consulting, and computer sciences being the leading sources.

Faculty numbers have grown considerably since 1970--up 66 percent--fueled primarily by the growth in universities and colleges. However, the growth has not been evenly distributed. Where full time faculty has grown by 42 percent, part time faculty has grown by over 260 percent; the most likely explanation for this dichotomy is the cost savings of non-tenured part time faculty. This growth in faculty has resulted in a declining student-staff ratio, dropping from 5.4 in 1976 to 4.8 in 1987.³³

Finally, from a gender and race perspective, faculty is a white

male's world. Male full time faculty outnumber females by three to one although the number of female faculty is growing. As for racial makeup, there has been little movement over the last ten years.³³

| | 1980 | 1990 |
|----------|-------|-------|
| WHITE | 91.2% | 88.5% |
| BLACK | 4.3% | 4.5% |
| HISPANIC | 1.5% | 2.0% |
| ASIAN | 3.0% | 5.0% |

OTHER CONDUCT ISSUES: Prior to examining the performance of post-secondary education, four conduct-related issues deserve mention. They are by no means inclusive of all conduct areas but rather represent a sampling of the broad spectrum.

1. Standards: Fewer than 50 colleges and universities can be classified as highly selective--accepting less than 50 percent of applicants. This highlights the broad access to the U.S. system. During the 1980s, there was a move towards tightening standards--a slight one. From 1979-1985, public institutions requiring at least one course in English for graduation rose from 56 to 71 percent and one in math from 51 to 61 percent.³⁴

2. Teaching: Concerns have been raised that elite universities are in full flight from teaching. It is not unusual for a \$70-\$80 thousand professor to teach just two to three courses per year.³⁵ Indeed there are arguments that a whole "academic underclass" has arisen, composed of part time professors, *nomad* full time professors seeking tenure, and teaching assistants that together "prop up" the whole system...with charges of resulting lower quality.

3. Publish or Perish! Fed by competition for higher ranking among universities, tenure and a research mentality, the alleged result is a lessening of instructional quality.

4. Research Funds Linkage: Over 75 percent of all federal research funds for education are from the Atomic Energy Commission, the National Air and Space Administration, and the Department of Defense, creating a significant education-military/industrial linkage. Recent charges by Rep. John Dingel (D-Mich), Chairman of the House Energy and Commerce Subcommittee on Oversight and Investigations, related to research over-billings of up to

\$1 billion, are tarnishing research universities' reputations.³²

PERFORMANCE: Despite the negative connotations of the last section, all the literature examined in this research shows a consensus that the U.S. Higher Education system is the finest in the world--particularly at the graduate level. The best indicator may be the number of foreign students who enroll in U.S. higher education institutions. Over half the PhDs in engineering, mathematics and economics awarded by American universities in 1990 went to foreigners.³³ Not discounting the argument that we may be lessening our competitiveness vis-a-vis the world arena by educating our economic challengers, many of these people stay in the U.S. and contribute to our competitiveness.

Internationally, higher education attainment provides some interesting comparisons. For 22 year olds, Japan graduates the highest percentage of male undergraduates. However, the U.S. significantly exceeds Japan and Europe in female undergraduate percentage (27.0% U.S. versus 11.8% Japan). Japan graduates twice the percentage of male engineers as the U.S. but the U.S. graduates twice the science majors by percentage as Japan. Women in the U.S. dramatically exceed Japan and most European countries as a percentage of engineering and science graduates--5.1% science grads in the U.S. versus 1.3% in Japan.³⁴

Domestically, the value of higher education can best be translated by earnings and employment. Income differentials based on

education level are substantial. From 1978 to 1988, annual income rose more rapidly for men with higher levels of education: 4 years of college = 74% v. 1 to 3 years high school = 46%. Women college grads' salaries rose by 93% but women's salaries were significantly below men's salaries at all levels as shown below:¹³

| | INCOME IN THOUSANDS | |
|---------------------|---------------------|-------|
| | MEN | WOMEN |
| 1-3 YRS HIGH SCHOOL | 21 | 13 |
| 4 YRS HIGH SCHOOL | 26 | 17 |
| 1-3 YRS COLLEGE | 30 | 20 |
| 4 YRS COLLEGE | 36 | 25 |
| 5+ YRS COLLEGE | 44 | 30 |

Finally, the higher the education, the less the unemployment. In 1989 for persons 16 years and older, those with 4 years and more of college only had 2.2 percent unemployment. However, those with only 1 to 3 years of high school had 11.8 percent unemployment.¹⁴

Where U.S. Higher Education is a national strength, our training system of vocational/technical education is not so highly regarded.

THE TRAINING SYSTEM (VOC-TECH/IND ED)

Just defining the U.S. "training system" is difficult as there is no clear separation from the educational system. Training runs the spectrum from Vocational/Technical (Voc/Tech) education at the secondary and community college level through trade schools and apprenticeship programs to U.S. industry programs with formal and on-the-job training (OJT). Defining it as the school-to-work transition, or the phase between formal schooling and employment,

may help to capture the sense of the training segment; but those descriptions are not all inclusive.

STRUCTURE: Like the description, discussing the training system's structure is difficult. This sector of the education industry is chaotic and uncoordinated. It consists of a series of interlocking and disconnected pieces described as follows:

SECONDARY SCHOOLS: Since high school graduation is the transition point to the workforce for 40 percent of students, secondary education falls within the training system. In 1989, 97 percent of high school students report taking at least one "vocational" course, although only 30 percent report being in a "vocational" track.⁴¹ Thirty-five percent of American secretaries acquire their skill in high school. Additionally, cooperative (coop) education, combining work and classroom experience, is a secondary school function. However, coop involves only 2.5 percent of high school students⁴² (mostly in retail and wholesale), making it relatively insignificant.

COMMUNITY/TECHNICAL COLLEGES: Formerly a feeder of four year post-secondary institutions, 66 percent of Community College enrollments are now in voc-ed versus only 13 percent in 1965. Further, these schools are the primary voc-tech source with five times the enrollment of all other sources.⁴³ Community Colleges in many cases duplicate the curricula of high school vocational programs but also offer more technical training.

PRIVATE TRADE/TECH SCHOOLS: With 1,100 schools currently

accredited, this segment offers over 100 major training programs. From truck driving to air conditioning, this segment includes 14 percent of those enrolled in post-secondary voc-tech education.⁴¹ Community/Technical colleges make up the rest. The latest estimates from the Department of Education show 1.2 million enrolled with cosmetology, real estate and secretarial programs being the top three offerings.⁴²

APPRENTICESHIP PROGRAMS: Even though there are 800 recognized occupations, apprenticeship programs are relatively insignificant. About 300,000 apprentices make up .3 percent of the work-force; their median age is 25.⁴³ By comparison, Germany's apprenticeship system comprises 6 percent of the work force; over 60 percent of this work force has completed vocational training.⁴⁴ Apprenticeship programs are employer created through either collective bargaining or their own initiative. The declining union role and the reduction of many traditional manufacturing jobs have led to a decline in apprenticeships. For example, machinist apprenticeships have dropped 45 percent since 1982.⁴⁵

FEDERAL/STATE PROGRAMS: The focus of these programs is typically on the economically disadvantaged:

1. Joint Training Partnership Act (JTPA): This Act superseded the Comprehensive Employment and Training Act in 1982. It is targeted on training disadvantaged older youths and adults for prime sector jobs. JTPA is administered by state agencies and over 600 Private Industry Councils (PICs). In 1989, 691,000 trainees were involved although this is only 5 percent of the 33 million eligible based on income.⁴⁶

2. Job Corps: Also a small-scale effort, it serves only 1 percent of young people actively seeking work--in 1990, only 35,000 18-to-21 year olds.⁴⁷

3. State Programs: Forty-four states offer one or more company customized programs. These programs are typically targeted at firms with less than 500 employees. The primary purpose is to train employed workers but often other goals are served, such as attracting new industries. Annual budgets total over \$375 million.

4. Military: Although not a disadvantaged program, DoD is the largest employee trainer. It has only 2 percent of the workforce but its training programs provide 45 percent of aircraft engine mechanics and 20 percent of electronic technicians for the private sector.⁵³

FORMAL EMPLOYER TRAINING: Anthony Carnevale, the chief economist for the American Society for Training and Development (ASTD), the trade association for the training industry, shows that one in eight American workers has received some kind of formal training course. Formal training is typically given in a classroom setting and is most prevalent in the hospital, transportation, and education industries. Between \$30 and \$44 billion are involved in providing formal training...roughly 1 percent of GNP and about \$385 per worker.⁵⁴ Firms provide 70 percent of training in-house and contract out the balance.

INFORMAL TRAINING: Unstructured, consisting of experienced co-workers showing newer employees how to do their jobs, informal or on-the-job training (OJT) is of much greater significance than formal training. The "follow Joe" tradition of OJT has been estimated to cost U.S. firms \$180 billion per year⁵⁵, making up over 35 percent of the \$500 billion industry. Twenty-eight percent of U.S. workers have received their training on the job. When considering precision production, craft and repair workers, 40 percent learn on the job.⁵⁶

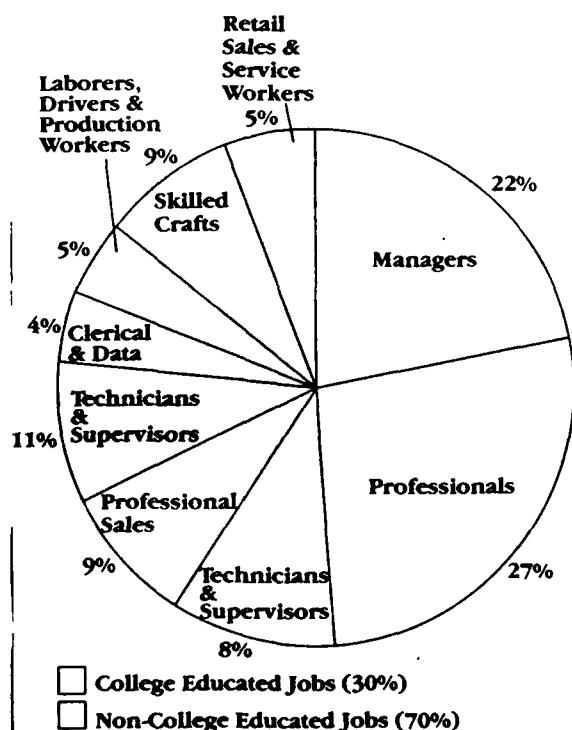
CONDUCT: Voc-Tech education and training have typically not been Corporate America's primary education interest. The U.S. has traditionally relied on the marketplace to determine educational training for work. Companies will train if it makes business sense and workers will seek training if it will improve their career prospects. However, greater mobility of U.S. workers and imperfect information regarding training requirements hinders efficient market functioning. Adding to this shortfall is the costly remedial education and training programs in such basic skills as reading, writing, and computation that absorb training dollars that more appropriately be spent on business skills.⁵⁵

Training among our industrialized competitors is much more formalized and targeted than in the U.S. Where we rely on community colleges and informal on-the-job training, extensive corporate training programs and state certified apprenticeship systems are the rule abroad. The transition from school to the workplace is much more structured with strong vocational programs. Additionally, international training systems take a long view with job turnover being less than in the U.S. For example, a typical American worker has eleven employers in his working lifetime versus five employers for the typical Japanese worker.⁵⁶ This static nature fosters human investment. Total quality management, structured worker rotation, quality circles and extensive retraining programs all contribute to impressive overseas programs.

The U.S. relies on educational institutions rather than formal training for work-related education. Even then, corporate financial support is meager in the voc-tech area. If all business contributions to secondary and two-year colleges went just to voc-tech programs, it would still only amount to 4 percent of all corporate giving to education.⁵⁷ Even formal training is relatively insignificant. On average, it makes up only 1.8 percent of payroll; employers spend 2.8 percent on coffee breaks, lunch, and other paid rest time.⁵⁸

Formal training itself is unevenly distributed. As Figure 3 shows,

Two Thirds Of Company Training Dollars Go To The College Educated



**Distribution of \$30 Billion
Formal Training Expenditures**

Source: American Society for
Training and Development

the emphasis is on training management and professional workers. Employees with four plus years of college (18 percent of the workforce), comprise 35 percent of the trainees. Those with less than a high school degree (23 percent of the workforce) are only 5 percent of the trainees.⁵⁹ Formal training is also unevenly distributed by age; those employees younger than 25 or greater than 44 years old receive little training...the reason being little or no cost recovery. In terms of gender and race, females

receive more training than men and whites more training than minorities. There are no clear reasons for this disparity.

Apprenticeship programs face large entry barriers of financing if they are going to become more dominant in our training system. The decline of unionization and collective bargaining has impacted the key funding mechanism for apprenticeships--the private corporation. Further, manufacturing associations are weak and unlikely to support apprenticeship programs, particularly the evening classes. Many non-union manufacturers, such as Bell & Howell, have dropped apprenticeship programs due to cost. Construction trades are still a vibrant apprenticeship market but the recent building slump has hindered their growth. Federal involvement in the apprenticeship area is limited. Although the Department of Labor's Bureau of Apprenticeship and Training (BAT) has launched "Apprenticeship 2,000", this program has been defined as "a public dialogue" and research initiative.⁶² However, without financing mechanisms such as Germany's payroll apprenticeship tax, or an incentive-based system, the U.S. apprenticeship program is likely to continue its minor role in our overall training system.

At the larger government level, our national and state programs take a narrow vocational focus. The result is a crazy quilt of overlapping policies. Typical is the lack of standardization of information exchanges that could assist employers and employees in the training marketplace. For example, there are 10 different

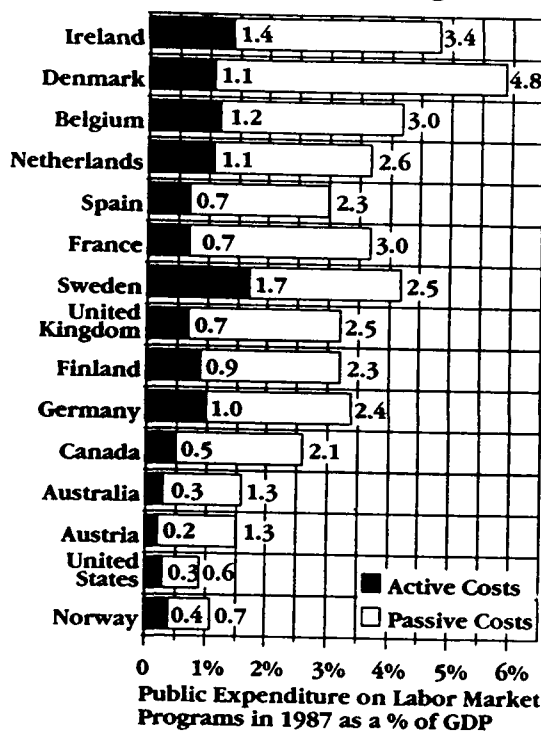
federal job classification systems and Department of Labor's system alone lists over 12,000 separate job classifications. Besides policies, federal programs are suspect. Recent charges of lax oversight of the Joint Training and Partnership Act's \$4 billion per year program may limit expansion of these initiatives.

Community and Technical Colleges are becoming more important in the voc-tech area. The principal reason is the growing complexity and escalating technical requirements for today's workforce. In many ways, they exceed the ability of secondary schools to provide the training. Additionally, states are focusing their customized training programs at the community college level. Nineteen states use these schools as the mainstay of the training program.¹¹ The problem is the "forgotten half" of non-post-secondary students who can't take advantage of this college training.

From initial training, through OJT, to retraining, American industry and American society in general take the narrow view: What's in it for me? Significant economic barriers of funding, worker mobility and information flow all contribute to this myopic perspective.

PERFORMANCE: The lack of a systematic pre-employment training system is one of the glaring differences between the U.S. and

Other Nations Invest More In Employment And Training Policies



*Passive includes mainly unemployment insurance, active includes mainly training and job counseling

Source: Swedish Labor Board

world competitors. As Figure 4 shows, the U.S. ranks near the bottom of public expenditures on employment and training. The U.S. has also long ranked near the bottom among industrialized nations in the number of workers who have completed apprenticeships, given the problems discussed under the conduct section, this comes as no surprise.

The U.S. undervalues and underinvests in training. Small firms that comprise 35 percent of our employment are the weakest link.⁶¹ They lack experience in training, have high rates of turnover and rarely have enough people at any one time to justify training. With these factors and the lack of public expenditures, it is no wonder that performance lags. America also suffers in retraining programs. There are some successes at the state level but federal programs are targeted at low income rather than displaced workers. Retraining is becoming increasingly important, as the baby boom generation has moved out of the traditional college and post-graduate years. The downsizing within the defense establishment,

combined with structural changes throughout the U.S. workplace, will fuel the need for more retraining.

Despite this rash of bad news, there are successes in training performance. Community and technical colleges are the "darlings" of the training sector. Even Sweden, which is renowned for its training programs, is studying our system. U.S. community and technical colleges, often with state support, are increasing their performance in four areas:¹³

1. Establishing advanced technical centers.
2. Forging strong links with local businesses to train in areas they need.
3. Assisting lower income individuals. Almost 50 percent of those enrolled at community and technical colleges versus 23 percent of those attending four-year colleges are drawn from the lowest socio-economic quarter.¹⁴
4. Providing adult education--a U.S. strength in its own right. Fifteen percent of adults participate and about two-thirds of these seek to improve their job skills.

CONCLUDING REMARKS: This paper has merely provided an economic baseline of post-secondary education and training systems in the Education Industry. There are numerous issues and initiatives that beg to be addressed...economic, technical and demographic factors all impact these two segments. Three possible areas of further analysis are an aging and growing minority workforce, structural

unemployment in an increasingly world economy, and federal control versus individual and firm educational choice.

Technology and the need for math and science disciplines will continue to be significant factors in the education industry. Post-secondary education in these areas is dependent on the foundations laid in elementary and secondary schools. The strategy is to enlarge the pool of math and science students and then retain them through the educational process. The success of technology education at Thomas Jefferson High School in Fairfax County offers much optimism. The challenge will be to broaden this effort to the larger student populace. Technology training must exploit the community college system, in part by infusing their strengths into the secondary school system and invigorating our retraining programs.

Governor Campbell's comments in the beginning of this paper recognized both the value and the problems of our education industry. Where recognition is often half the battle, the strengths of our post-secondary system and the challenges of our training sector offer opportunities to improve our education industry.

ENDNOTES

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